

REMARKS

This is in response to the Official Action currently outstanding with regard to the above-identified application.

Claims 1, 3-9 and 15-17 were pending in this application at the time of the issuance of the currently outstanding Official Action. By the foregoing Amendment Applicants have amended Claims 1, 5, 6, 7 and 15. Further, Claims 18 and 19 have been added, and Claims 3 and 4 have been cancelled, without prejudice. Accordingly, upon the entry of the foregoing Amendment, Claims 1, 5-9 and 15-19 will constitute the Claims under active prosecution in this application.

The Claims as they will stand upon the entry of the foregoing Amendment, including appropriate status identifiers, are set forth above in accordance with the Rules.

More particularly, in the currently outstanding Official Action, the Examiner has:

1. Acknowledged and entered Applicants' Request for Continued Examination;
2. Acknowledged Applicants' claim for foreign priority and confirmed the receipt by the United States Patent and Trademark Office of the required certified copies of the priority documents;
3. Provided Applicants with a Notice of References Cited (Form PTO-892) and copies of the references cited therein;

4. Acknowledged Applicants' Information Disclosure Statement filed 28 June 2004 by providing Applicants with a copy of the Form PTO-1449 that accompanied that Information Disclosure Statement duly signed, dated and initialed by the Examiner in confirmation of the consideration of the art listed therein – **Applicants have not as yet received any confirmation concerning their Information Disclosure Statements of 24 March 2004 or 24 August 2004 – Confirmation of the latter Information Disclosure Statements in response to this communication is respectfully requested;**
5. **Failed to provide Applicants with any indication concerning the acceptability of the drawings submitted as part of this application – an indication concerning the acceptability of the drawings in response to this communication is respectfully requested;**
6. Rejected claims 1, 3-4, 6-9 and 15-16 under 35 USC §102(e) as being anticipated by Hsia et al (US 6,328,848);
7. Rejected claim 5 under 35 USC §103(a) as being unpatentable over Hsia et al (US 6,328,843 in view of Bowker (US 4,687,543) and
8. Rejected claim 17 is rejected under 35 USC §103(a) as being unpatentable over Hsia et al. (US 6,328,843) in view of Whetten (US 5,153,754).

Further comment concerning items 1-5 above is deemed to be unnecessary in these Remarks.

With respect to items 6-8, the subject matter of original Claim 2 has been removed from Claims 1 and 7, and has been presented in the form of new dependent Claims 18 and 19. Further Claims 3 and 4 have been cancelled, without prejudice.

In addition, all of the independent claims (Claims 1, 7 and 15) have been amended so as to recite that when the substrate has been etched by the plasma in a plasma generation period and a change is made in plasma generating condition according to any one of the stacked films to be etched, a plasma generating condition for stably maintaining generation of the plasma is first changed and thereafter a change is made in the process gas. Applicants respectfully submit that as so amended the claims of this application now are in condition for allowance.

More particularly, it will be understood that the Hsia et al reference discloses that the plasma is to be extinguished between etchings except in those cases in which a so-called "over etch" is to be performed. In the latter case, the plasma is maintained and the process gas is reformulated (see, Hsia, et al, Col. 9, lines 50-63). Accordingly, to the extent that Hsia, et al disclose a change of both plasma generation conditions and processing gas, those changes are accomplished after a period during which the plasma is extinguished. The present invention as hereinabove claimed (as supported at page 5, lines 29-32 and page 8, lines 30-33 of the present specification) is different.

Accordingly, it is to be noted again that the present invention as presently claimed includes the feature distinct from the cited art that:

when the substrate is etched by the plasma in a plasma generation period and a change is made in plasma generating condition according to any of the films that is to be etched, the plasma generating condition for stably maintaining generation of the plasma is first changed and thereafter a change is made in the processing gas

This feature is distinct from (and advantageous over) all of the art upon which the Examiner currently relies. It will be understood that if the type of process gas is changed in a plasma generation period in which plasma is being generated, the load of the plasma will be changed. Consequently, matching cannot be established between the incident high frequency that is instantaneously applied and the reflected high frequency, and only a high frequency of less than a predetermined frequency level can be supplied.

Therefore, the stable generation of the plasma cannot be maintained under the foregoing conditions. Accordingly, in the present invention, before the type of process gas is changed, the "pressure" or "output of a power source" which is a condition for stably maintaining generation of the plasma is changed in the direction in which the plasma generation will be stably maintained upon the change of the process gas. In this regard, the power output is generally changed to make it larger while the direction of the change in the pressure varies depending upon the process. This allows the change of the type of process gas to be accomplished while the plasma is being stably maintained (contrary to the reverse procedure). The bias voltage also may be changed in a similar manner to stably maintain the plasma prior to the change of the process gas.

In view of the foregoing Amendment and Remarks, therefore, Applicants respectfully submit that the claims of this application as they will stand upon the entry of the foregoing Amendment are in condition for allowance. Consequently, reconsideration and allowance of claims 1, 5-9 and 15-19 is respectfully requested.

Applicants also believe that additional fees beyond those submitted herewith are not required in connection with the consideration of this response to the currently outstanding Official Action. However, if for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge and/or credit Deposit Account No. **04-1105**, as necessary, for the correct payment of all fees which may be due in connection with the filing and consideration of this communication.

Should the Examiner wish to discuss any of the Amendments and/or Remarks made herein, the undersigned attorney would appreciate the opportunity to do so.

Respectfully submitted,

By: David A. Tucker

David A. Tucker
(Reg. No. 27,840)

EDWARDS & ANGELL, LLP
P.O. Box 55874
Boston, Massachusetts 02205
Tel. No. (617) 517-5512